



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,771	04/04/2001	Karl J. Urquhart	016499-706	1436

7590            08/18/2004

E. Joseph Gess, Esq.  
BURNS, DOANE, SWECKER & MATHIS, L.L.P.  
P.O. Box 1404  
Alexandria, VA 22313-1404

EXAMINER
----------

CINTINS, IVARS C

ART UNIT	PAPER NUMBER
----------	--------------

1724

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/824,771	URQUHART ET AL. <i>[Signature]</i>
	<b>Examiner</b>	<b>Art Unit</b>
	Ivars C. Cintins	1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 28 May 2004.
- 2a) This action is **FINAL**.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1,3-21,23-46,48 and 50-52 is/are pending in the application.
- 4a) Of the above claim(s) 15-18 and 34-45 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3-14,19-21,23-33,46,48 and 50-52 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-14, 19-21, 23-33, 46, 48 and 50-52 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. The limitation that the packed section comprises a purification material "other than a membrane" (claims 1, 48, and 50, line 9) does not appear to be supported by the disclosure originally filed, and hence constitutes **new matter**. Applicant should note that merely disclosing the use of materials which are not membranes (pages 20-22) does not provide support for the above noted limitations, since these other materials could be used in combination with a membrane, as in the Crofts et al. system. Furthermore, the limitation that the purification material is selected from the group consisting of "polystyrene and polyacrylic resins" (claims 1, 48, and 50, lines 9-10) also does not appear to be supported by the disclosure originally filed, and hence also constitutes **new matter**. Applicant should note that the disclosure originally filed only includes examples of polystyrene-DVB or polyacrylic-DVB resins (see page 20, paragraph 0063; and page 21, line 2); and does not provide support for homopolymers of polystyrene or polyacrylic, nor for copolymers other than these materials with divinyl benzene.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-14, 19, 23-33, 46, 48, 50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haslett (U.S. Patent No. 1,774,004) in view of Moses (U.S. Patent No. 4,305,826). Haslett discloses an apparatus for purifying a liquid, which apparatus includes a plurality of serially connected cartridges containing liquid purification material, retaining screens, and threaded connectors (see Figs. 1-3; page 1, lines 39-44, 48-52 and 66; and page 2, lines 1-2 and 12). Accordingly, this reference discloses the claimed invention with the exception of the composition of the treatment material, the length, diameter and length to diameter ratio of the cartridge, and the material from which this cartridge is constructed (claims 10 and 31). Moses teaches that zeolites have been replaced by cation exchange resins in modern water softening systems because they have a much higher exchange capacity (see col. 1, lines 45-50). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polystyrene cation exchange resin of Moses (see col. 1, line 48) for the zeolite of Haslett, in order to obtain the advantages disclosed by this secondary reference for the system of the modified primary reference. Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ cartridges having the recited dimensions in the system of the modified primary reference, in order to ensure that these cartridges are capable of containing an effective amount of treatment material. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct these primary reference cartridges from a perfluoroalkoxy polymer (PFA), since this material is both lightweight and durable. As to claim 52, Applicant should note that this claim merely modifies the type of polyacrylic resin employed, if polyacrylic

resin is selected, but does not limit this claim to the use of a polyacrylic resin (i.e. a polystyrene resin could still be selected).

Claims 1, 3-14, 19, 20, 23-33, 46, 48, 50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crofts et al. (U.S. Patent No. 5,215,665). Crofts et al. discloses purifying hydrogen peroxide with an ion exchange cartridge (see col. 4, lines 62-64) containing a polystyrene resin (col. 4, line 13). This reference further teaches (col. 1, line 34) that the purification could occur in a semiconductor facility. Accordingly, this reference discloses the claimed invention with the exception of the length, diameter and length to diameter ratio of the cartridge, the material from which this cartridge is constructed (claims 10 and 31), and the use of a plurality of cartridges (claim 19). Applicant should note that the recitation of a purification material “other than a membrane” does not distinguish over the reference system because this reference discloses an embodiment wherein the membrane is employed only to retain the ion exchange resin particles in the cartridge (see col. 4, lines 29-33); and in this embodiment, the “purification material” (i.e. the resin particles) is “other than a membrane.” Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ cartridges having the recited dimensions in the system of Haslett, in order to ensure that these cartridges are capable of containing an effective amount of treatment material. Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct these primary reference cartridges from a perfluoroalkoxy polymer (PFA), since this material is both lightweight and durable. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a plurality of cartridges in the reference system, in order to increase its treatment capacity. As to claim 52, Applicant

should again note that this claim merely modifies the type of polyacrylic resin employed, if polyacrylic resin is selected, but does not limit this claim to the use of a polyacrylic resin.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crofts et al. as applied above, and further in view of Casolo (U.S. Patent No. 3,985,648). The modified primary reference discloses the claimed invention with the exception of the recited arrangement of cartridges. Casolo discloses a liquid purification system comprising a plurality of groups of cartridges (see col. 3, line 8; and col. 4, line 49) connected in parallel, wherein each group comprises cartridges connected in series (see Fig. 2). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of the modified primary reference with the additional purification cartridges of the secondary reference, in order to obtain additional purification capability for the liquid undergoing treatment in this modified primary reference system.

Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haslett and Moses as applied above, and further in view of Applicant's admitted prior art. The modified primary reference discloses the claimed invention with the exception of the specific ion exchange resin employed. Applicant has admitted that the recited polystyrene resins are commercially available (paragraphs 0063 and 0064 of the specification). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ any of the admittedly known polystyrene ion exchange resins as the polystyrene resin of the modified primary reference (see col. 1, line 48 of Moses), since these admittedly known polystyrene ion exchange resins are capable of removing cations from a liquid in substantially the same manner

as the polystyrene resin of the modified primary reference, to produce substantially the same results.

Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crofts et al. as applied above, and further in view of Applicant's admitted prior art. The modified primary reference discloses the claimed invention with the exception of the specific ion exchange resin employed. Applicant has admitted that the recited polystyrene resins are commercially available. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ any of the admittedly known polystyrene ion exchange resins as the polystyrene resin of the modified primary reference (see col. 4, line 13), since these admittedly known polystyrene ion exchange resins are capable of removing cations from a liquid in substantially the same manner as the polystyrene resin of the modified primary reference, to produce substantially the same results.

Gronbeck et al. (U.S. Patent No. 5,702,611) discloses purifying a liquid with a polyacrylic resin of the type recited (see col. 7, lines 17-19).

Applicant's arguments filed May 28, 2004 have been noted and carefully considered but are not deemed to be persuasive of patentability. Applicant argues that “[o]ne of ordinary skill in the art, at the time that Haslett '004 was conceived, would not have known to use polystyrene resins as an equivalent for the claimed zeolite” because the Haslett patent issued August 26, 1930, and polystyrene resins were not developed until mid 1940. This argument is not deemed to be persuasive since “at the time the invention was made” (i.e. the claimed invention, not that of Haslett) polystyrene was not only well known, but considered to be significantly superior to zeolite for water softening applications (see col. 1, lines 45-50 of Moses).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to I. Cintins whose telephone number is (571) 272-1155. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Duane Smith, can be reached at (571) 272-1166.

The centralized facsimile number for the USPTO is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Ivars Cintins*  
Ivars C. Cintins  
Primary Examiner  
Art Unit 1724

I. Cintins  
August 16, 2004